

# System and method for removing contaminant particles relative to an ion beam

Publication number: TW497159 (B)

Publication date: 2002-08-01

Inventor(s): BENVENISTE VICTOR MAURICE [US]; GRAF MICHAEL ANTHONY [CA]; HARRINGTON ERIC RYAN [US]; RATHMELL ROBERT DAY [US] +

Applicant(s): AXCELIS TECH INC [US] +

Classification:

- international: H01J27/20; H01J37/02; H01J37/04; H01J37/30; H01J37/317; H01L21/265; H01J27/02; H01J37/02; H01J37/04; H01J37/30; H01J37/317; H01L21/02; (IPC1-7): H01L21/265

- European: H01J37/02D; H01J37/30A; H01J37/317A

Application number: TW20010120483 20010821

Priority number(s): US20000654379 20000901

Also published as:

WO0219376 (A2)

WO0219378 (A3)

US6476399 (B1)

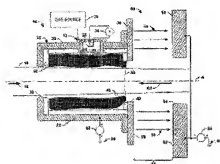
JP2004508666 (T)

EP1314180 (A2)

more >>

## Abstract of TW 497159 (B)

A system for inhibiting the transport of contaminant particles with an ion beam (16) includes a particle charging system (12) for charging particles within a region through which the ion beam travels. An electric field (50) is generated downstream relative to the charged region so as to urge charged particles away from a direction of travel (18) for the ion beam (16).



Data supplied from the espacenet database — Worldwide

# System and method for cleaning contaminated surfaces in an ion implanter

Publication number: TW452820 (B)

Publication date: 2001-09-01

Inventor(s): BERNSTEIN JAMES DAVID [US]; KOPALIDIS PETER  
MILTADIS [GR]; FREER BRIAN SCOTT [US] +

Applicant(s): EATON CORP [US] +

Classification:

- International: C23C14/00; H01J37/317; H01L21/265; C23C14/00;  
H01J37/317; H01L21/02; (IPC1-7): H01J37/02; H01J37/317

- European: H01J37/317

Application number: TV20000107825 20000426

Priority number(s): US19990309096 19990510

Also published as:

 EP1052676 (A2)

 EP1052676 (A3)

 EP1052676 (B1)

 US6221169 (B1)

 SG84593 (A1)

more >>

## Abstract of TW 452820 (B)

A method and system is provided for cleaning a contaminated surface of a vacuum chamber, comprising means for (i) generating an ion beam (44) having a reactive species (e.g., fluorine) component; (ii) directing the ion beam toward a contaminated surface (100); (iii) neutralizing the ion beam (44) by introducing, into the chamber proximate the contaminated surface, a neutralizing gas (70) (e.g., xenon) such that the ion beam (44) collides with molecules of the neutralizing gas, and, as a result of charge exchange reactions between the ion beam and the neutralizing gas molecules, creates a beam of energetic reactive neutral atoms of the reactive species; (iv) cleaning the surface (100) by allowing the beam of energetic reactive neutral atoms of the reactive species to react with contaminants to create reaction products; and (v) removing from the chamber any volatile reaction products that result. Alternatively, the method and system include means for (i) generating an energetic non-reactive (e.g., xenon) ion beam (44); (ii) directing the non-reactive ion beam toward a contaminated surface (100); (iii) introducing a cleaning gas (70) proximate the contaminated surface, comprised at least partially of a reactive species (e.g., fluorine) component; (iv) dissociating the cleaning gas using the ion beam (44) to create a supply of energetic reactive neutral atoms of the reactive species; (v) cleaning the surface (100) by allowing the energetic reactive neutral atoms of the reactive species to react with contaminants to create reaction products; and (vi) removing from the chamber any volatile reaction products that result.

Data supplied from the [espacenet](#) database — Worldwide

**SEARCH REPORT FOR PATNT APPLICATION**  
**ROC (Taiwan) Patent Application No. 093138510**  
(Translation)

1. Filing Date: 10 December 2004		
2. Priority Date: 12 December 2003		
3. International Patent Classification: <i>H01J37/317</i> (2006.01) , <i>H01L21/265</i> (2006.01)		
4. Scope of Search on International Patent Classification: H01J3702-H01J37/317 (2006.01), H01J27/00 (2006.01), H01L21/265 (2006.01), H01J7/24 (2006.01)		
5. Name of Database Under Search (Keyword): TIPO domestic and foreign patent database		
Relevance Code	Cited Prior Art Reference(s) and Relevant Paragraph(s)	Claim(s) of Relevance
A	1. TW 452820 2001/09/01 Full Text	1~45
A	2. TW 497159 2002/08/01 Full Text	1~45
A	3. JP 2000-323051A 2000/11/24 Full Text	1~45
D,A	4. US 6288403B1 2001/09/11 Full Text	1~45
D,A	5. US 6452338B1 2002/09/17 Full Text	1~45
D,A	6. US 6686595B2 2004/02/03 Full Text	1~45
<p><b>Explanation of Relevance Codes:</b></p> <p>X: particularly relevant prior art reference(s), if taken alone, that can negate the novelty or inventive step of the claimed invention</p> <p>Y: particularly relevant prior art reference(s), if combined with one or more other documents, that can negate the inventive step of the claimed invention</p> <p>A: prior art reference(s) related to general state of art</p> <p>D: prior art reference(s) disclosed in the specification</p> <p>E: prior art reference(s) that is filed earlier but is laid open or published later than the examined patent application</p> <p>O: prior art reference(s) related to publicly using or sale or display at a trade exhibition;</p> <p>P: prior art reference(s) that has (have) been publicly disclosed during the time period between the priority date and the filing date of the examined patent application</p> <p>L: prior art reference(s) that is (are) cited for other reason(s).</p>		

Date of Completion: 8 April 2010

## 第 093138510 號專利申請案檢索報告

1. 申請日: 93 年 12 月 10 日
2. 優先權日: 2003 年 12 月 12 日
3. 本案國際專利分類號(IPC): H01J37/317 (2006.01), H01L21/265 (2006.01)
4. 檢索國際專利分類號(IPC)範圍: H01J3702-H01J37/317 (2006.01), H01J27/00 (2006.01), H01L21/265 (2006.01), H01J7/24 (2006.01)
5. 檢索使用資料庫名稱(關鍵詞): TIPO 國內外專利資料庫

關聯性代碼	引用文獻資料與相關段落處	相關聯請求項
A	1. TW 452820 2001/09/01 全文	1~45
A	2. TW 497159 2002/08/01 全文	1~45
A	3. JP 2000-323051A 2000/11/24 全文	1~45
D,A	4. US 6288403B1 2001/09/11 全文	1~45
D,A	5. US 6452338B1 2002/09/17 全文	1~45
D,A	6. US 6686595B2 2004/02/03 全文	1~45

**關聯性代碼說明:**

X: 單獨引用即足以否定發明新穎性或進步性之特別相關的文獻。	A: 一般技術水準之參考文獻。	O: 公開使用、販賣或展覽陳列之文件。
Y: 結合一篇或多篇其他文獻後足以否定發明進步性之特別相關的文獻。	D: 說明書已記載之文獻。	P: 申請日與優先權日同公開之文獻。
	E: 申請在前、公開/公告在後之專利文獻。	L: 其他理由引用之文獻。

完成日: 99 年 4 月 8 日